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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/662,238

09/16/2003

Peter W.Q. Xu

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06/06/2006

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EXAMINER

RAETZSCH, ALVIN T

ART UNIT

PAPER NUMBER

1754

DATE MAILED: 06/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/662,238

Applicant(s)

XU ET AL.

Examiner

Alvin T. Raetzsch

Art Unit

1754

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

*Oath/Declaration*

Non-initialed and/or non-dated alterations have been made to the oath or declaration (citizenship change of Xu). See 37 CFR 1.52(c).

*Claim Rejections*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. **Claims 1-15** are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Rayfield et al. (4,835,195).

Rayfield teaches forming a calcium carbonate by the method of dispersion of calcium carbonate and carboxylic acids in a polyhydric alcohol for use in polyesters. Monomeric malic and tartaric acids are taught (Column 5, line 53) as well as ethylene glycol as the dispersant (Column 6, lines 18-19). While it is not explicitly taught that acid group of the coupling agent bonds to the calcium carbonate and the hydroxyl group bonds to the polyester, it is inherent that this occurs.

Regarding claim 11, Rayfield teaches that the calcium carbonate ground to an average of less than 2.5 microns by wet grinding (Claim 1-B- (a)) in known dispersants (Column 4, lines 48-50). Since Rayfield uses ethylene glycol as a dispersant, grinding in glycol is anticipated or at least obvious.

2. **Claims 1-3, 6-7, & 10-11** are rejected under 35 U.S.C. 102(b) as being anticipated by Tanabe et al. (JP 07097438).

Tanabe teaches a method for the synthesis of a polyester wherein a polyester, such as polyethylene terephthalate, is added to a dispersion of calcium carbonate in ethylene glycol. The dispersion additionally includes a coupling agent, which can include carboxylic acid compounds, organic compounds having carboxyl groups, their derivatives, and compounds having carboxyl groups and other functional groups (e.g. hydroxyl groups) such as hydroxyl acids. The coupling agent may be added at various stages of polyester production. The particle size of the calcium carbonate is taught to be from 0.01 to 0.6 microns. While it is not explicitly taught that acid group of the coupling agent bonds to the calcium carbonate and the hydroxyl group bonds to the polyester, it is inherent that this occurs.

Regarding claim 11, a product claim is only defined by process limitations so far as they necessarily impart unexpected qualities upon the product. Different methods of grinding are not expected to produce a dissimilar product, and the burden shifts to the applicant to show an unexpected difference. See MPEP 2113.

3. **Claims 1-3, 6-7, & 10-11** are rejected under 35 U.S.C. 102(b) as being anticipated by Minayoshi et al. (US 5,000,871).

Minayoshi et al. teaches the formation of a calcium carbonate dispersion in ethylene glycol which, when polyester is added, gives the carbonate an affinity to polyester and enable highly functional polyester products. The dispersion includes a copolymer of an alpha, beta monoethylenically unsaturated carboxylic acid with an alpha, beta monoethylenically unsaturated carboxylic acid ester. The combination of dicarboxylic acids and methacrylates having hydroxyl groups is taught, which would meet the limitations of having an acid group and a hydroxyl group, and would act as a coupling agent. While it is not explicitly taught that acid group of the coupling agent bonds to the calcium carbonate and the hydroxyl group bonds to the polyester, it is

Art Unit: 1754

inherent that this occurs. Table 3 teaches the use of calcium carbonates having particle sizes of less than 0.4 microns. See above regarding product by process claim 11.

4. **Claims 4-5, 8 & 12-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanabe et al.

Tanabe et al. is applied above. Tanabe et al. does not explicitly teach the use of gluconic, malic, or tartaric acid. However, the use of such would have been obvious to one of ordinary skill at the time of invention because they represent known hydroxy-carboxylic acids and would meet the intended goal of Tanabe et al. Additionally, the applicant is drawn to the following section of the MPEP, which is applicable in the present case, as the acids claimed are structurally similar to those taught by Tanabe et al.: MPEP 2144.09 Close Structural Similarity Between Chemical Compounds (Homologs, Analogues, Isomers).

REJECTION BASED ON CLOSE STRUCTURAL SIMILARITY IS FOUNDED ON THE EXPECTATION THAT COMPOUNDS SIMILAR IN STRUCTURE WILL HAVE SIMILAR PROPERTIES

A prima facie case of obviousness may be made when chemical compounds have very close structural similarities and similar utilities. "An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skilled in the art to make a claimed compound in the expectation that compounds similar in structure will have similar properties."

Any inquiry concerning this communication should be directed to Alvin T. Raetzsch at 571-272-8164. The examiner can normally be reached on 9-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



ATR

STUART L. HENDRICKSON  
PRIMARY EXAMINER